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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/040,042	11/07/2001	Wei-Yu Su	TS01-132	1835

28112 7590 03/09/2004

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EXAMINER

EL ARINI, ZEINAB

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 03/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/040,042

Applicant(s)

SU, WEI-YU

Examiner

Zeinab E. EL-Arini

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____

DETAILED ACTION

Oath/Declaration

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

The oath (the signature, the residence, and the citizenship, are not clear) is not in permanent ink, or its equivalent in quality, as required under 37 CFR 1.52(a)(1)(iv).

Specification

2. The disclosure is objected to because of the following informalities:
On page 4, lines 16, 17, "there is provided a photomask. There is treated" is confusing term. On page 4, last line, "an transparent." is confusing and is incomplete term. On page 5, line 1, "substrates." Is incomplete term, and at line 10, "materials and methods as are well" is confusing term. On page 6, lines 17, 24, "as are well known" is confusing term, and at line 23, "as are" is confusing term. On page 7, line 20, "as are" is confusing term. On page 7, line 26, "efficacy" is confusing term. The specification does not include Figs. 4 and 5, and does not include "detailed description of Fig. 5. It is suggested that on page 9, "Fig. 3" and "Fig. 4" be changed to read "Fig. 4" and "Fig. 5" .

Appropriate correction is required.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: On page 7, lines 9, 10, "10" has been recited, however Fig. 2 does not include "10". A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, lines 3-7 are confusing and cannot be understood, because the steps of the cleaning process have not been recited. Also, "treating the

photomask to a cleaning process" is indefinite and confusing term. At lines 10-11, "multiple number cleaning cycles" is confusing term.

In claim 2, line 1, "reagents" lacks antecedent basis. At line 2, "cleaning solution" lacks antecedent basis.

In claim 4, line 1, "the cleaning solution" lacks antecedent basis.

In claim 5, line 1, "the pH", and "the cleaning solution" are without proper antecedent basis.

In claim 7, lines 5-9, are confusing and cannot be understood. In claim 7, lines 3 and 4 are redundant. At line 5, "treating ---- to a cleaning process" is confusing term. At line 5, "the cleaning process" does not include cleaning steps. At line 12, "the cleaning procedure" lacks antecedent basis.

In claim 9, line 1, "reagents" and at line 2, "the cleaning solution" are without proper antecedent basis.

In claim 11, line 1, "the cleaning solution" lacks antecedent basis.

In claim 12, line 1, "the pH" and "the cleaning solution" are without proper antecedent basis.

In claim 13, line 1, "may be" is indefinite term.

6. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim s 1, 6, and 7 recites the broad recitation greater than, and the claim also recites about which is the narrower statement of the range/limitation.

7. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the

metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 10, line 2 recites the broad recitation less than, and the claim also recites about which is the narrower statement of the range/limitation.

8. Claims 1-6 and 7-13 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: the steps of reducing defect levels in photomasks have not been recited.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kern (Article) or Hanson et al (5,472,516).

Kern teaches a method of cleaning a substrate. The process comprises contacting the substrate with cleaning solution comprising ammonium hydroxide, Hydrogen peroxide, and water, and agitating the solution using megasonic energy, and exposing the substrate for certain amount of time to the cleaning process or removing the contaminants from the substrate. The pH of the cleaning solution is about 8 (read on the alkaline cleaning solution). See the document in general. The reference teaches the temperature range as claimed. The reference does not teach repeating the cleaning process and the ratio as claimed.

It would have been obvious for one skilled in the art to adjust the ratio to obtain optimum results. Also, the reference teaches using a multiple number of cleaning cycles to clean the substrate which is functionally

equivalent to the cleaning process. This is because it is not clear if the cleaning cycles as claimed will use (NH_4OH , H_2O_2 , H_2O) solution only one time or more than one, or will use other cleaning solution in the cleaning cycles.

It would have been obvious for one skilled in the art to repeat the cleaning cycles to obtain optimum results. Also the limitations of claims 3 and 10 are inherent in Kern's process.

Hanson et al. teach a process and apparatus for semiconductor device fabrication. Hanson et al. teach cleaning the substrate by using solution comprising NH_4OH , H_2O_2 , H_2O , and having pH of about 9 to about 11. Hanson et al. also teach that the amount of time the substrate is cleaned is largely a matter of design choice. The reference also teaches agitating the cleaning solution and the temperature range as claimed. See col. 1, line 10- col. 4, line 23. The reference does not teach the multiple numbers of cleaning cycles, the ratio, and the limitations of claims 3 and 10 as claimed.

It would have been obvious for one skilled in the art to adjust the ratio, and using multiple numbers of cleaning cycles to obtain optimum

results. The limitations of claims 3 and 10 are inherent in the Hanson et al. reference.

Kern and Hanson et al. do not teach the steps as claimed.

It would have been obvious for one skilled in the art to use Kern or Hanson et al. process to obtain the claimed process. This is because the process taught by Kern or Hanson et al is functionally equivalent to the process as claimed.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lee et al. (6,139,993) teach photomask defect repair method. Pierrat (5,695,896) teaches process for fabricating a phase shifting mask. Datta et al. (5,152,878) teach a method for cleaning metal residue on molybdenum tanks.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zeinab E. EL-Arini whose telephone number is (571)272-1301. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-

1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Zeinab E. EL-Arini
Zeinab E. EL-Arini
Primary Examiner
Art Unit 1746

ZEE
3/1/04